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IS/WP2-0192
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**ADVISORY COMMITTEE ON ADVANCED TELEVISIONS SERVICE
IMPLEMENTATION SUBCOMMITTEE
WORKING PARTY 2 - TRANSITION SCENARIOS
MINUTES OF THIRTY-EIGHTH MEETING 4/21/92**

1. The meeting was called to order by Acting Chairman, Merrill Weiss, at 12:30 P.M. at NCTA in Washington, D.C.
2. The agenda was adopted as written. Charles Heuer's suggestion to review agenda items 6-10 first was accepted.
3. A list of attendees is attached.
4. The minutes of the 3/25/92 meeting were approved with the following corrections:

Item I-6, paragraph 1 - "... with an 18-24 month development cycle. The key is when there is enough certainty to start development."

Item II-3 Change 4/15/92 to 5/15/92.

The minutes of the 2/26/92 meeting were formally approved since they were not approved at the 3/25/92 meeting.
5. Review of Action Items from 2/26/92 Meeting.

Action items were not reviewed during the meeting. Merrill Weiss and Larry Cochran will review status outside of the meeting.
6. IS/WP2 Report to Implementation Subcommittee 4/21/92.

The IS/WP2 report to the 4/21/92 Implementation Subcommittee is shown in attachment IS/WP2-0186.
7. Consumer Electronics Survey.

Merrill Weiss stated that he has received five responses to the Consumer Electronics Survey, and that he has contacted eight of the non-respondents in an attempt to get their responses.

Gina Harrison commented that Toshiba has recently stated publicly that they expect HDTV receivers to be available one year after an FCC decision and that this information is in contradiction to that developed by IS/WP2. Merrill Weiss responded that the Working Party has gathered its inputs from industry experts and that to date these conclusions have been corroborated by the initial survey results. Larry Thorpe also stated that the IS/WP2 forecast of 2 1/2 - 3 years for general market availability is somewhat substantiated by a similar situation in Japan where the MUSE standard was established in 1988 and first receivers became available in 1991. Gina expressed a concern about the public perception of aggressive availability forecasts and how these forecasts may effect the credibility of information developed by IS/WP2. A lengthy discussion followed. Stan Baron suggested that Toshiba be asked to share details of their one year estimate with IS/WP2 so that the Working Party might take advantage of this information in their work. Merrill Weiss will ask Toshiba to include this information in their response to the Consumer Electronics Survey.

8. Professional Equipment Manufacturers Survey.

This survey will be structured after Proponent responses are reviewed in more detail.

9. Software Survey

Initial follow-up actions on an HDTV software survey have been identified in previous Working Party meetings. Merrill Weiss will conduct a mini-survey of several potential HDTV software users to understand their plans for obtaining such software. A larger survey will be considered after results of the mini-survey are reviewed.

Gina Harrison suggested that one of the mini-survey questions should deal with the issue of what type of HDTV channel programming is planned by the various networks. Charles Heuer commented that the Implementation Subcommittee request for IS/WP2 to obtain information on whether or not HDTV software availability would be a roadblock in the implementation process was specifically related to HDTV software - not general ATV channel programming. Merrill Weiss will include new questions suggested during the meeting in the mini-survey.

10. Local Area Groups.

Merrill Weiss reported that Dave Folsom has recently contacted each of the Local Area Groups and that the Groups have received new data from IS/WP2 concerning Proponent power levels. Merrill also stated that the Groups will be sharing information with one another and that a report to IS/WP2 is expected within the next month. Charles Heuer commented that the recent power level indications from Proponents may cause more problems than originally anticipated by the Local Area Groups.

Jeff Krauss stated that the Field Test Task Force will determine more accurate Proponent power levels and that this information can also be shared with the Local Area Groups.

11. Proponent Meeting Follow-Up.

Merrill Weiss stated that a revised ATV Station Block Diagram developed at the last Working Party meeting has been sent to Proponents along with response tables to be returned to the Working Party for analysis. Merrill reported that preliminary responses

have been received thus far from NHK and ATRC. Also distributed at the meeting was the cover letter and ATV Station Block Diagram sent to Proponents. IS/WP2-0189.

Responses to the IS/WP2 Proponent follow-up questions are still needed from GI and MIT. The MIT follow-up questions are shown in attachment IS/WP2-0191. ATRC has previously agreed to provide written responses to the follow-up questions answered during the 3/25/92 Proponent meeting.

A discussion took place on how best to utilize the information received from the Proponent questions. Merrill Weiss suggested that the responses be collated and summarized on a question by question basis and that questions be identified that may contain Proponent specific answers that differentiate the various systems. Charles Heuer agreed to collate and condense the general question responses and Merrill Weiss will begin similar work on the Broadcast questions.

A lengthy discussion took place on the NHK and ATRC responses to the ATV Station block diagram. Charles Heuer noted that some parts of the block diagram were unclear to those not familiar with broadcast plants. It was agreed that a general description of the system aspects of some of the major blocks was needed to assist Proponents in analyzing the diagrams. A considerable time during the meeting was devoted to this task. Merrill Weiss will reissue the block diagram with further explanation in order to help Proponents clarify their responses.

12. Final Report Preparation

Charles Heuer recommended that the Working Party emphasis be placed on reorganizing and condensing the contributions to the 5th Interim Report to meet the requirements outlined by Bob Hopkins for the Final Report. Some portions of the report must wait completion of work in progress by the Working Party. Charles Heuer and Jim Kutzner volunteered to begin organization of such a document.

13. New Business

Merrill Weiss distributed a memo from Paul Donavon further detailing the common carrier bit rates likely to be utilized in carrying HDTV signals. IS/WP2-0190.

14. Summary of action items

- a) Identify PERT network resource requirements and determine total resources required to implement PERT tasks. (To be completed after the Proponent meetings.) - Merrill Weiss
- b) Determine impact on broadcast PERT implementation assuming typical staff limitations of small, medium and large stations. (To be completed after Proponent meetings.) - Merrill Weiss
- c) Contact Gerald Robinson to review satellite PERT chart. - Larry Cochran/Merrill Weiss
- d) Review common carrier video PERT chart SONET development task with NYNEX. - Merrill Weiss

- e) Follow-up with nonrespondants on Consumer Electronics Survey. Contact Toshiba concerning one year development cycle. - Merrill Weiss
 - f) Contact networks on software survey. - Merrill Weiss
 - g) Collate and summarize proponent responses to IS/WP2 questions and follow-up questions. - Charles Heuer/Merrill Weiss
 - h) Organize and condense 5th Interim Report outline for Final Report. - Jim Kutzner/Charles Heuer
 - i) Send Proponents description of ATV block diagram. - Merrill Weiss
15. The next meeting will be a joint meeting with SS/WP3, PS/WP5 and Proponents. The meeting is scheduled as follows:

**Tuesday, May 19, 1992
10:00 A.M.
NCTA
1st Floor Conference Room
1724 Massachusetts Avenue
Washington, D.C.**

15. The meeting was adjourned at 5:45 P.M. *

* None of the matters discussed at this meeting were taken into consideration by the Commission in the Second Report and Order/Further Notice of Proposed Rule Making, in MM Docket No. 87-268.

**FCC ADVISORY COMMITTEE ON ADVANCED TELEVISION SERVICE
WORKING PARTY ON TRANSITION SCENARIOS
(WP2)**

**Tuesday, April 21, 1992
12:30 P.M. - 5:30 P.M.
NCTA
3rd Floor Conference Room
1724 Massachusetts Avenue
Washington, D.C.**

AGENDA

- 1. Adoption of Agenda.**
- 2. Approval of 3/25/92 Minutes.**
- 3. Review of Action Items.**
- 4. Proponent Meeting Follow-Up.**
- 5. Final Report Preparation.**
- 6. Consumer Electronics Survey.**
- 7. Professional Equipment Manufacturers Survey.**
- 8. Software Survey.**
- 9. Local Area Group Update.**
- 10. New Business.**
- 11. Conclusions and Action Items.**
- 12. Next Meeting.**

TRANSITION SCENARIOS

WP-2

April 21, 1992

NAME	COMPANY	ADDRESS	PHONE
I. COCHRAN	THOMSON	600 N. SHERMAN INDIANAPOLIS	317-231-4226
DAVID L. HANN	CONSULTANT/ GTE TELCOM	1203 CREST DR. COLLEGEVILLE, TX 76094	317-267-5946
PETER D. SYMES	GRASS VALLEY GROUP	PO BOX 1114, GRASS VALLEY CA 95945	817-656-1993
JIM TAYLOR	SONY	4-141 ASPENWOOD, ARLING, KANSAS	916-478-3437
TAK Ota	SONY	3 PARAGON DR. MONTVALE, NJ 07645	201-462-3057
LARRY THORPE	SONY	3 PARAGON DR. MONTVALE, NJ 07645	201-358-4267
Stan Baron	NBC	3 Rockefeller Plaza New York NY 10112	212-664-7557
JEFF KRAUSS	CONSULTANT/GT	17 W. JEFFERSON ST #106 ROCKVILLE MD 20850	301-309-3703
CHAS HEUER	ZENITH	1000 MILWAUKEE AVE GREENVIEW ILL 60025	708 331 8331
D. Merrill Weiss	Consultant	25 Mulberry Lane - Edison, NJ 08820-2108	908-906-0907 Phone & FAX
R. HARRIN	FEC	2025 VHSR Rm 8002 WDC 20008	202 682 7792
PAUL JUSTUS	EIA	2001 PA. AVE NW WDC 20006	202-457-8716
Ken Skinner	Philip's Labs	345 Seaborough Road, Briarcliff Manor N.Y. 10512	914/945-6088 FAX: 6570

WP-2

April 21, 1992

NAME	COMPANY	ADDRESS	PHONE	FAX
James Kutner	PBS	1320 Braddock Place Alexandria	203 739-5473	(8938)
Keiichi Kurota	NHK	1 Rockefeller Plaza Room 1430 NY, NY 10020	(212) 489-9550	(FAX -9559)

Report to Implementation Subcommittee

from Working Party 2 on Transition Scenarios

April 21, 1992

1. Proponent Meetings

- a. Process**
- b. Preliminary Results**
- c. Continuing Analysis**

2. Survey of Consumer Electronics Manufacturers

- a. Revisions to Consumer Electronics PERT/Gantt/Assumptions**

3. Survey of Professional Equipment Manufacturers

4. Follow-up with Local Area Groups

5. Dissemination of Technical Information

6. Final IS/WP-2 Activities

Proponent Meetings - Process

- **Joint meeting with proponents – 1/13/92 (no MIT)**
 - **Familiarization with committee's work**
 - **Presentations by IS/WP-2 by industry segment**
 - PERT charts**
 - Gantt charts**
 - Assumptions**
 - Block Diagram (of Transitional Broadcast Station)**
 - Questions for Proponents**
 - **Opportunity for questions from proponents**
- **Period for proponent analysis (no MIT):**
 - **Written responses to Questions for Proponents**
 - **IS/WP-2 Review of responses to Questions**
 - **Preparation of Follow-up Questions**
(IS/WP-2 Conference Calls [x3])

Proponent Meetings - Process - cont'd.

- **Follow-up meeting with proponents – 3/25/92**
 - **Joint meeting with SS/WP-3 & PS/WP-5**
 - **Individual proponent presentations**
 - **System-specific answers to questions**
 - **System-specific differences in PERT/Gantt/Assumptions**
 - **Further questions from IS/WP-2**
 - **System-specific production hardware differences**
 - **Initial written response from MIT**
 - **Joint development of block diagram with SS/WP-3**
 - **Common descriptive terminology developed**
- **MIT situation**
 - **Additional conference call to develop follow-up questions**
 - **Response anticipated for today's meeting**
 - **Meeting with MIT yet to be scheduled**

Proponent Meetings - Preliminary Results

- **Implementation similarities abound**
 - Few differences discovered to date
 - Differences may lie in the implementation details
 - Detailed analysis of responses required
- **Power levels of systems charted in common terms (table)**
 - Data provided by proponents
 - Needed to guide Local Area Groups
 - Impacts on transmitters, antennas, transmission lines, towers
 - Ultimately determines need for new towers
- **Reuse of existing STL frequencies likely to be possible**
 - Data from proponents
 - Compression of both HDTV and NTSC into single microwave channel
 - Claimed by all proponents responding
 - Initial analysis makes this look feasible
 - Depends on common siting of HDTV & NTSC transmitters
 - Technical analysis to be coordinated with PS/WP-3
 - Cost analysis to be done by SS/WP-3

Power Levels of Proposed Systems

HDTV Proponent Predicted Transmitted Power Levels

	<u>Average Power</u>			<u>Peak Power</u>		
	<u>Lo V</u>	<u>Hi V</u>	<u>UHF</u>	<u>Lo V</u>	<u>Hi V</u>	<u>UHF</u>
Narrow MUSE	<-12.6 dB	<-12.6 dB	<-12.6 dB	-6 dB	-6 dB	-6 dB
DigiCipher	-15 dB	-15 dB	-10 dB	<-10 dB	<-10 dB	<-5 dB
DSC-HDTV	-12 dB to -15 dB			-6 dB to -9 dB		
AD-HDTV	-12 dB	-15 dB	-12 dB	-2 dB	-5 dB	-2 dB
CC-DigiCipher	-15 dB	-15 dB	-10 dB	<-10 dB	<-10 dB	<-5 dB

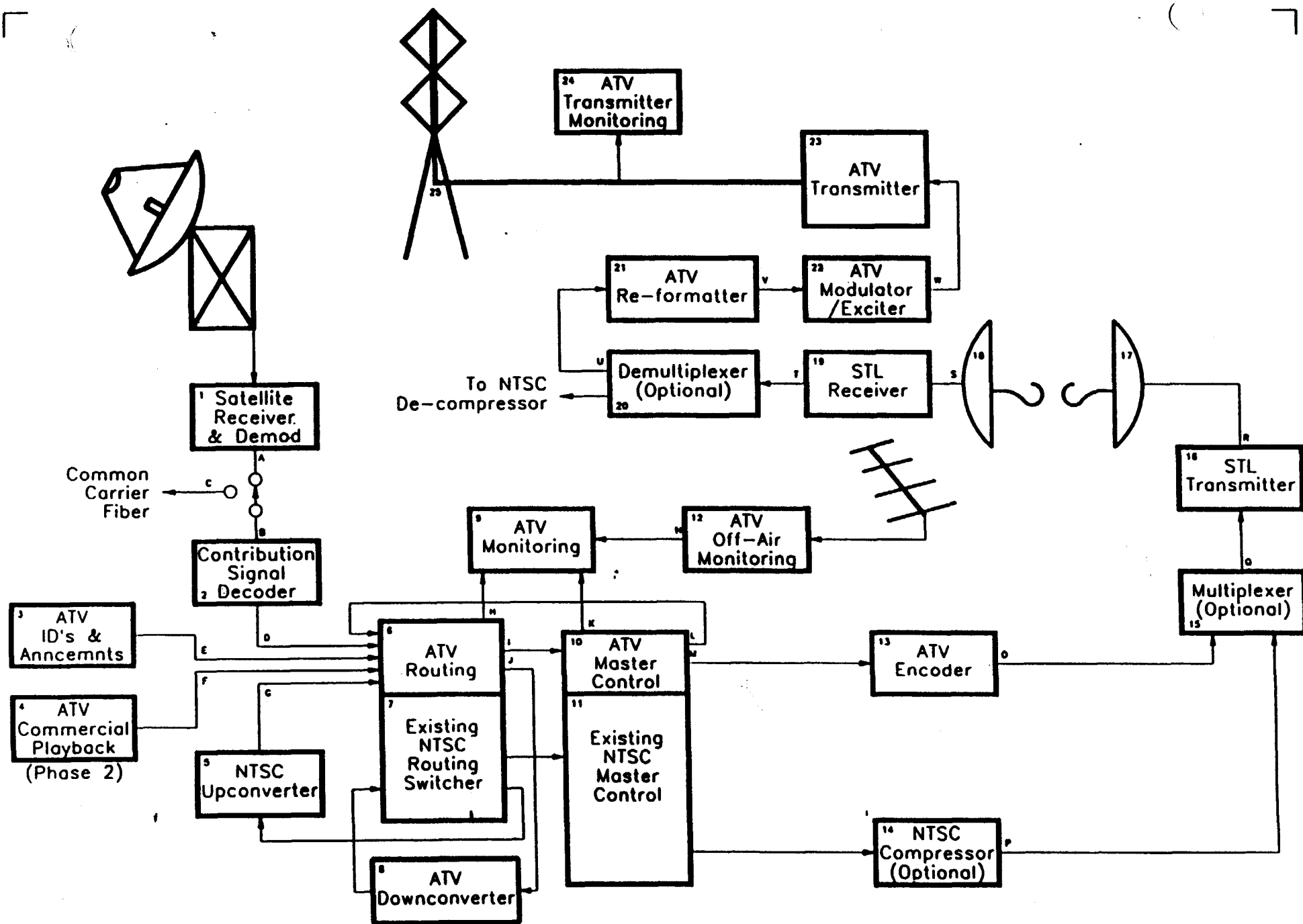
All Reference: NTSC Peak Power

Channels 6 = 20 dBk = 100 kW
 13 = 25 dBk = 316 kW
 36 = 37 dBk = 5000 kW

Based on Proponent Information as of 3/3/92

Proponent Meetings - Continuing Analysis

- **Detailed analysis of system differences**
 - **System extensibility**
 - **Ability to use standard headers & descriptors**
 - **Ability to record/playback on Consumer VCR**
 - **Maintenance of "trick" functions on Consumer VCR**
 - **Broadcast plant requirements (block diagram)**
 - **Ability to post-process compressed signals**
 - **Ease or difficulty of production processing of compressed signals**
 - **Cuts**
 - **Keys**
 - **Full image manipulation**
 - **Availability of intermediate levels of compression**
- **Analysis of proponents' abilities to support implementation**
 - **Concern previously expressed about possible differences**
 - **Provision of detailed technical information for Rules and Standards**
 - **Support for manufacturers in start-up phase**
 - **Integrated circuits for receiver manufacturers**
 - **Initial product evaluation for standards compliance**



ATV Transitional Television Station

Survey of Consumer Electronics Manufacturers

- **Findings by Consumer Electronics experts in IS/WP-2**
 - Receivers generally available 2½-3 years following FCC decision
 - Proponent might have 6-9 month advantage in start-up
 - General availability required to begin real consumer market
- **Survey of Consumer Electronics Manufacturers undertaken to validate findings**
 - Because of significance of receiver availability to entire implementation
 - Participants in IS/WP-2 represent 3 C.E. manufacturers
 - All three are members of proponent teams
- **Responses received to date confirm IS/WP-2 findings**
 - Survey covers total of 15 manufacturers
 - Five responses returned so far – 1/3 of companies surveyed
 - All confirm timing of receiver availability as determined by IS/WP-2 experts
 - Some suggestions received for improvements in PERT/Gantt/Assumptions

Survey of Consumer Electronics Manufacturers - *cont'd.*

- **IS/WP-2 documents modified based on inputs from C.E. manufacturers**
 - **Single set of PERT/Gantt/Assumptions split into three sets**
 - **Categorizes manufacturers by types**
 - **Proponent consumer electronics manufacturer**
 - **Non-proponent manufacturer that develops its own Integrated Circuits**
 - **Non-proponent manufacturer that purchases Integrated Circuits from a vendor**
 - **Differentiation will allow more careful examination of timing of receiver availability**

Survey of Professional Equipment Manufacturers

- Professional equipment manufacturers surveyed once at beginning of process
 - Survey based solely on different production standards
 - Only information available at the time
 - Apparent that many answers were given to influence the outcome of the process
 - Results of the initial survey were discarded as inconclusive
- Professional equipment manufacturers to be surveyed once again
 - Far more known about the system proposals
 - Fewer options for underlying raster specifications
 - Opportunities for other forms of compression must be explored
 - IS/WP-2 to concentrate on timing of availability of equipment
 - Will likely work in cooperation with SS/WP-3 handling the economic issues

Follow-up with Local Area Groups

- **Local Area Groups established in five major cities**
 - **Boston**
 - **New York**
 - **Chicago**
 - **San Francisco**
 - **Los Angeles**
- **Two-fold purpose**
 - **Gain implementation information for IS/WP-2 from potential problem cities**
 - **Instigate head start for broadcasters in some of the major markets**
- **Local Area Groups needed more information to proceed**
 - **Data on system power levels for coverage equivalent to NTSC**
 - **System transmitter linearity requirements and headroom capabilities**
 - **Availability and power handling of wideband antennas**
 - **Other antenna options**
- **Most of needed information now available**
 - **Local Area Groups to be asked to look at their situations again and report**

Dissemination of Technical Information

- **Dissemination of technical info identified by IS/WP-2 as critical to implementation**
 - **Required for setting of FCC Rules**
 - **Required to permit manufacturing at all levels**
 - **Required to permit operation of systems**
 - **On critical path for all industry segments and participants**
 - **Major part of IS/WP-2 Report to IS on 11/19/91 & in all documentation**
- **Now understood that ATSC will act as convenor of documentation effort**
 - **Remains critical that organization to carry out tasks be identified in advance**
 - **Must avoid delays in starting process once system selection is made**
 - **Any delay in technical documentation delays entire implementation**

Final IS/WP-2 Activities

- **Integration of PERT/Gantt/Assumptions into single Implementation program**
 - **Currently done by industry segment**
 - **Plan is to provide unified structure for overall Implementation**
 - **Will work out inter-industry interactions**
- **Differentiation of system implementations, if possible**
- **Preparation of Report to SS/WP-4**
 - **First draft requested for 5/15/92**
 - **Detailed description of document provided by SS/WP-4**
 - **One page summary (to be included in ACATS Final Report)**
 - **Approx. 25-page backup detail document as part of Appendix**
 - **Other documentation as necessary for communication to FCC**
- **Work on Report to SS/WP-4 already begun**
 - **Outline prepared of IS/WP-2 Fifth Interim Report**
 - **Will serve as starting point for preparation of Final Report**

**FCC Advisory Committee on Advanced Television Service
Implementation Subcommittee Working Party 2 on Transition Scenarios**

To: Proponent Representatives

From: Merrill Weiss

Date: April 7, 1992

Re: Updated ATV Station Block Diagram & Description Tables

Attached for your use is the material promised at the joint meeting held by IS/WP-2, SS/WP-3, and PS/WP-5 with you. It consists of an updated block diagram of an "ATV Transitional Television Station," two tables for you to fill in, and a key to be used in filling in one of the tables. The tables are to be filled in and returned for use by both IS/WP-2 and SS/WP-3 at their next round of meetings.

The block diagram has been updated with the move of the ATV Downconverter (8) to receive its input from the ATV Routing block (6). In addition, the output of the ATV Master Control (10) now also feeds back into the ATV Routing block. This is as was agreed by all of the broadcast interests represented at the meeting. You should note that some of the blocks and many of the lines have been renumbered or relettered; so, you should not use the old versions of the drawing that were circulated at the meeting.

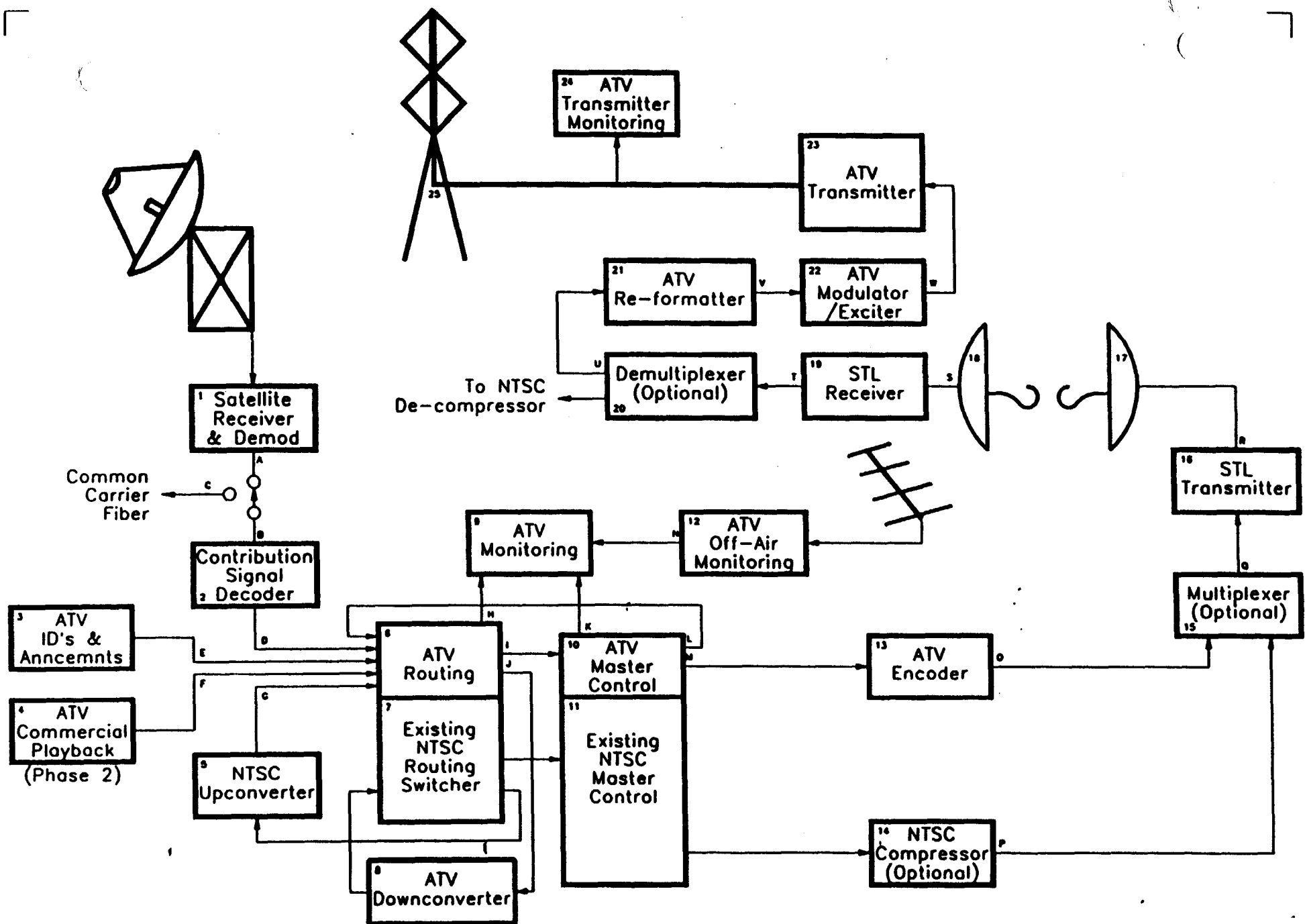
The key lists the categories of signals as they were developed at the meeting. It is intended to help you fill in the table that describes the signals on each of the lettered lines. When you fill in the table, you need only insert one of the eight category numbers in the column headed "Cat. #" to define the type of signal on the particular line in the block diagram. Then, using the data descriptions for that category, place the requested information in the similarly lettered columns. For example, for a Category 1 signal (Component Video), column A would have the words "Analog" or "Digital" entered, column B would indicate the raster format, and column C would indicate the component set. Where there is a limited number of expected choices, they are separated by a comma. Otherwise you are expected to enter data in the form indicated in parentheses. If there is some case not covered by the wording in the key, use whatever you feel is necessary to get the information across.

The second table lists the equipment included in the block diagram by unit number. You are expected to provide a description of the each unit in terms of what it does to the input signals to yield the output signals you have defined in the first table. For instance, if a switcher has compressed inputs and compressed outputs but must fully decompress the signals in order to process them, you would indicate something like: "Switcher - decompresses inputs to full component signals at 1050/59.94/2:1, GBR; cuts, keys, dissolves between them; compresses output to same 45 Mb/s signal as on input." Please be sure to indicate special characteristics such as the need to establish or maintain timing across multiple frames, for instance.

Regarding the space in the second table, not knowing what you will need to enter, I have produced it with only one line for each item. If you think you will need more space for descriptions of the equipment, please let me know. I can easily expand the table to give you two or more lines per entry, as required.

The two Working Parties will be meeting again on Tuesday, April 21, and Wednesday, April 22. Please return the filled in tables to me no later than the afternoon of Monday, April 20. It would be helpful if you also sent a copy to Larry Thorpe at Sony for SS/WP-3. If it is easier for you, however, let me know, and I will forward a copy to Larry for you.

As always, if there are any questions I can answer for you or if there is anything I can do to help you in preparing the material requested, please do not hesitate to call upon me. You can reach me by phone or FAX at (908) 906-0907.



ATV Transitional Television Station

**FCC Advisory Committee on Advanced Television Service
Implementation Subcommittee Working Party 2 on Transition Scenarios (IS/WP-2)
Systems Subcommittee Working Party 3 on Economic Analysis (SS/WP-3)**

**ATV Transitional Television Station Block Diagram and Table
Key to Signal Format Categories and Related Data**

Organization of Data in this Key:

- Cat. # Category Description**
A. Data for Column A
B. Data for Column B
C. Data for Column C

Categories and Related Data:

1. Component Video (Uncompressed/3 components)
 - A. Analog, Digital
 - B. Raster Format (#lines/ F_v /Interlace ratio)
 - C. Component Set (GBR, Y_P_R)
2. Intra-Plant Compression
 - A. Bit Rate (serial digital assumed)
 - B. Intra-field, Inter-field
 - C. Sub-sampling (H & V, by component)
3. Inter-Plant Distribution/Contribution Compression
 - A. Bit Rate
 - B. Intra-field, Inter-field
 - C. Sub-sampling (H & V, by component)
4. ATV Final Compression
 - A. Bit Rate
5. ATV Signal Processed for Terrestrial Broadcast Transmission
 - A. Analog, Digital
 - B. Bandwidth or Bit Rate (as appropriate)
6. ATV Signal Processed for Studio-to-Transmitter Link (STL) Transmission
 - A. Analog, Digital
 - B. Bandwidth or Bit Rate (as appropriate)
7. Modulated STL Signal
 - A. Modulation Technique
 - B. Bandwidth
8. Modulated Terrestrial Broadcast Signal
 - A. System Name

**ATV Transitional Television Station
Signal Format Categories and Related Data**

Signal	Cat.#	Data A	Data B	Data C
A				
B				
C				
D				
E				
F				
G				
H				
I				
J				
K				
L				
M				
N				
O				
P				
Q				
R				
S				
T				
U				
V				
W				

See associated "Key to Signal Format Categories and Related Data" for the information required in each column